Some Topics from Industrial Health in Japan*

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I have, first of all, the pleasure of offering as a citizen of the free world my warmest congratulations to the American people for the successful flight of their space shuttle Columbia.

I am deeply honored at being granted the Yant Memorial Award and being invited to lecture before this distinguished audience. I feel that these honors are not for myself alone but for all the people working in the field of industrial health in Japan.

I had difficulty deciding what would be the most appropriate theme to talk about before such a distinguished audience, but if I may, I would like to trace the development of industrial health in our country over the years.

Brief Sketch of Historical Steps of Industrial Health in Japan

The history of occupational health in Japan, as far as I know, goes back to the time the Great Buddha of Nara was erected, i.e. between the years 747 and 752. I am sure some of you have visited Nara, one of the ancient capitals of Japan. It is believed that many workers suffered from mercury intoxication during the construction of the Great Buddha. Although there remains no clear medical record, we can still find some description referring to preventive measures that were taken for the platers who were involved in that project.

Since then we have witnessed the fusion and synthesis of Japanese civilisation and foreign civilisations as we introduced advanced technologies from different parts of the world.

As you may know, Japan closed its doors to the outside world in 1603 and remained in isolation for approximately 260 years until 1868, which prevented the Japanese people from having formal contacts with advanced civilisations of the world. It is striking that despite this information and technology continued to flow into Japan as various literatures somehow found their way into Japan. As Japan once again joined the international community in 1868, she began to absorb advanced knowledge from the west at an ever accelerating rate.

In the area of industrial health, quite contrary to the trends at that time in the west, Japan first made its headway into this field in the form of control of general health of workers as tuberculosis of factory workers was becoming a major social issue in the 1920s. After World War II, we began to establish the industrial health system of today by learning from the west, especially the United States.

What is worthy of special note in the history of industrial health system in Japan
is the establishment of the University of Occupational and Environmental Health in 1978.

According to the bulletin of the University, it was established in order to develop occupational and environmental health to meet the needs of the coming post-industrial society.

The University has set itself the following goals:
1. To foster a philosophy of life-long devotion to the basic human needs, and to this end provide the students with the ability to continuously educate themselves.
2. To develop environmental science on the basis of life science with focus on the occupational and general environment of man.
3. To develop a new discipline of ecology which incorporates economics.
4. To firmly establish occupational medicine in an industrialized and post-industrial society, while also integrating it with comprehensive community health care.

The university, as a pioneer in the field of the medical and health science in Japan, aims at accomplishing all these goals for the purpose of establishing a new society and a better life for mankind.

**Primary Health Care System and Industrial Health**

Today, primary health care is very much at focal point of debate in WHO and throughout the world. Primary health care must be flexible so that it can be adjusted to the specific and varying needs in different countries. We in Japan are trying to organise our primary health care as constructively as possible by taking into due consideration the past as well as present situation of the health care system in Japan. We are currently making attempts to synthesise community health, industrial health and school health, and organise in a systematic manner maternal and child health, adult health, and health of the aged.

Since the British system of general coverage of national health insurance has taken root in Japan, but historically it was a combination of British community health scheme and German industrial health insurance.

As it is essential to combine these into a community health insurance which would provide the necessary financial support for our primary health care system, we are making necessary coordination in this direction. We must, however, bear in mind that it will be no easy task for the Japanese to organise the existing health insurance system into a community health insurance system as it took the British about a century before their national health service came to be what it is today. Notwithstanding this, we feel that we must proceed with this task as expeditiously as possible in order to be prepared for briefly list up arrival of the 21st century.

Let me briefly list up the areas in which we must work on in order to establish systematic primary health care in Japan.
1) Establishment of bioethics.
2) Reformation of the educational system, especially the curriculum for the health-allied professions.
3) Provision of Health education for the general public.
4) Establishment of community health care system.
5) Provision of comprehensive health care.
6) Completion of community health insurance system.
7) Introduction of measures to cope with the aging of the population.
8) Development of a system incorporating maternal and child health, school health and industrial health.

Of these, bioethics has received foremost emphasis in primary health care in Japan. In fact, bioethics is attracting world-wide. To cite the words of Prof. Mataix, the need to establish a new code of ethics in the form of bioethics arises from;
1) The remarkable development of medical and biological science and skill;
2) Ingrained sensitivity of people toward various issues;
3) Doubts toward science which dose not
accompany value judgment; and
4) Awakening of people as a result of maturation of human culture.

The following questions cannot be addressed adequately with conventional medical code of ethics.

1) Life prolongation procedure and euthanasia.
2) Manipulation of human behavior through drug administration and/or surgery.
3) Application of genetic engineering to man.
4) Destruction and preservation of nature.
5) The responsibility of today's generation toward future generation.
6) Population control.
7) Artificial abortion (esp. in connection with fetal diagnosis).
8) Manipulation of reproduction by artificial insemination and other means.
9) So-called living-body experimentation.
10) Organ transplantation.
11) Allocation and development of health resources.
12) Ideal doctor-patient relationship.
13) Quality of life.

In view of the very profound interrelationships that exist, both direct and indirect, between industrial health and all the above-mentioned aspects, industrial health plays an extremely important role in Japan as well.

I have so far dwelt on philosophical aspects by following the suggestions Dr. Long, the president of the conference kindly made for my lecture. For most of my career, however, I have been working on rather technical or biological research related to quite a few subjects in industrial health. Among such subjects, I have been most interested in normal value study with special reference to evaluation of industrial health.

**Needs of Normality Study**

I had an opportunity to discuss the following matters under the title of "Occupational health and its assessment" on the occasion of Ciba Symposium, London in 1967:

1) The analysis of industrial sick absence
2) Toxicological testing for occupational health and safety
   1) Trends in industrial toxicological testing
   2) Extrapolation from animal experiments to man
   3) What indicators are necessary and appropriate in judging toxicity?
   4) How to finance toxicological testing.
   5) Toxicological testing system for unidentified materials.
3) Physiological values in relation to health and/or medical practices.

I would like, if I may, to add a little more on physiological value study relating to evaluation in industrial health, which I consider is one of the most important basic knowledge in our field.

A feature of medical progress in recent decades is that laboratory tests are of increasing importance not only in clinical diagnosis but also in general and specific health examinations.

When a test result is obtained in either clinical diagnosis or health examination, its normality or abnormality has to be assessed and a decision made as to whether the examinee is diseased or healthy. For this purpose, a set of values with an upper and a lower limit is empirically determined for each particular test item. If the value found is outside the normal range, the usual decision is simply that it is a morbid finding. However, this kind of checking procedure is not generally acceptable because these empirically known "normal" ranges are not always the product of well-planned surveys and are not based on a firm concept.

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*Occupational Health and Its Assessment*  
of normality.

Over 30 years ago, during the post-war period when the nutritional level was comparatively low in our country, we observed some "improvement" in normal values in accumulated data on the specific gravity of whole blood (Fig. 1). Repeated observations of the total leucocyte count for a group of healthy individuals revealed that certain variations exist which can be statistically analysed for their variances. Consequently, remarkable individual differences have been recognized* (Table 1; Fig. 2).

* Katsunuma, H. et al.;

Table 1 Frequency distribution of total leucocyte count

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results indicate that certain fluctuations in so-called normal values can be expressed as within-individual and between-individual variances. Both are considered to be related to biological information processing. The within-individual variation is, presumably, an aspect of homeostasis or the feedback mechanism in the body**, and some of the between-individual variance is assumed to follow genetic and/or individually accumulated biological information.

From present knowledge it seems that the level used for evaluation, whether a given value is normal or not, should be settled, not in general terms but from the operational standpoint of a particular health program. More attention should be paid to normal or physiological values for a particular health program based on the knowledge of within-individual fluctuation and between-individual variance in terms of agent, sex, age, social group etc. I believe that this is essential for further progress in industrial health so far in our country.

In closing, I would like to express my sincere gratitude to the Rockefeller Foundation which provided me with the first opportunity to study in the United States, and to the American Industrial Hygiene Association for inviting me to lecture here today and granting me the honorable Yant Memorial Award and also giving me this opportunity of meeting once again with many good old friends.

** Katsunuma, H.;

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